

WHAT IS CLAIMED IS:

1. A device for detecting an end point of polishing of a substrate, comprising:

5 a camera configured to obtain a two-dimensional image of a substrate surface targeted for polishing;

an image characteristic value calculator configured to calculate a characteristic value for the two-dimensional image by analyzing the two-dimensional image; and

10 a polishing end point determinator configured to determine an end point of polishing of the substrate according to the image characteristic value.

2. A device for detecting an end point of polishing according to Claim 1, wherein

the image characteristic value is an entropy index that substantially represents an entropy indicating an amount of information in the two-dimensional image.

3. A device for detecting an end point of polishing according to Claim 1, wherein

the image characteristic value is a difference statistic index that substantially represents a statistical value regarding pixel value differences in the two-dimensional image.

4. A device for detecting an end point of polishing according to Claim 1, wherein

the polishing end point determinator determines a time of the end point when the image characteristic value has reached a predetermined threshold value.

5. A device for detecting an end point of polishing according to Claim 1, wherein

the polishing end point determinator determines a first time point when the image characteristic value has reached a predetermined threshold value, and determines a second time point as the end point after the polishing has been continued for a predetermined time period from the first time point.

6. A method for detecting an end point of polishing of a substrate, comprising the steps of:

(a) obtaining a two-dimensional image of a substrate surface targeted for polishing;

(b) calculating a predetermined characteristic value for the two-dimensional image by analyzing the two-dimensional image; and

(c) determining an end point of polishing of the substrate according to the image characteristic value.

7. A method of detecting an end point of polishing according to Claim 6, wherein

the image characteristic value is an entropy index that substantially represents an entropy indicating an amount of information in the two-dimensional image.

8. A method of detecting an end point of polishing according to Claim 6, wherein

the image characteristic value is a difference statistic index that substantially represents a statistical value regarding pixel value differences in the two-dimensional image.

9. A method of detecting an end point of polishing according to Claim 6, wherein

the step (c) includes the step of determining a time of the end point when the image characteristic value has reached a predetermined threshold value.

5           10. A method of detecting an end point of polishing according to Claim 6, wherein

the step (c) includes the steps of:

determining a first time point when the image characteristic value has reached a predetermined threshold value; and

10           determining a second time point as the end point after the polishing has been continued for a predetermined time period from the first time point.

11. A computer program product for detecting an end point of polishing of a substrate, comprising:

15           a computer readable medium; and

a computer program stored on the computer program medium, the computer program including:

a first program for causing a computer to obtain a two-dimensional image of a substrate surface targeted for polishing;

20           a second program for causing the computer to calculate a predetermined characteristic value for the two-dimensional image by analyzing the two-dimensional image; and

a third program for causing the computer to determine an end point of polishing of the substrate according to the image characteristic value.

12. A computer program product according to Claim 11, wherein

the image characteristic value is an entropy index that substantially represents an entropy indicating an amount of information in the two-dimensional image.

13. A computer program product according to Claim 11, wherein the image characteristic value is a difference statistic index that substantially represents a statistical value regarding pixel value differences in the two-dimensional image.

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14. A computer program product according to Claim 11, wherein the third program determines a time of the end point when the image characteristic value has reached a predetermined threshold value.

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15. A computer program product according to Claim 11, wherein the third program includes:

a program for causing the computer to determine a first time point when the image characteristic value has reached a predetermined threshold value; and

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a program for causing the computer to determine a second time point as the end point after the polishing has been continued for a predetermined time period from the first time point.